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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,351	07/31/2003	Oliver Harnack	450117-04465	3470

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EXAMINER

YU, MELANIE J

ART UNIT PAPER NUMBER

1641

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/631,351

Applicant(s)

HARNACK ET AL.

Examiner

Melanie Yu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-20 is/are pending in the application.
- 4a) Of the above claim(s) 1 and 21-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/10</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group II, claims 2-20, in the reply filed on 18 January 2205 is acknowledged. The traversal is on the ground(s) that the claims of groups I-IV are directed to substantially the same invention. This is not found persuasive because although claims 1 and 2 recite the steps of "exposing", "providing" and "immobilizing" and the preambles are drawn to the same invention, the methods of groups I and II are patentably distinct and would require different searches because different elements of the method are "exposed" and "immobilized". Applicant further argues that the products of claims 21 and 22 are defined as product by process, wherein the process of making the product is the same as the process recited in claim 2. However, the inventions are distinct if it can be shown that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). The product of claims 21 and 22 can be made by either of the materially different processes of group I or II. Therefore, the inventions of groups I-IV are distinct and would each require a different search.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Objections***

2. Claims 3-20 objected to because of the following informalities: The claims depend from non-elected claim 1. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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3. Claims 2-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 2, it is unclear if the method steps are completed in the recited order or whether the method can also be performed with the steps in another order. The

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 2-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al. (US 2002/0065242) in view of Caldwell et al. (US 5,516,703).

Regarding claims 2, 3 and 14-18 Ford et al. teach a method of attaching a hydrophilic species to hydrophilic macromolecules immobilized on a surface, comprising the steps: providing a surface (par. 0019; par. 0078; par. 0082); immobilizing hydrophilic nucleic acids

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(hydrophilic macromolecules) on the surface (par. 0019; par. 0078; par. 0082); and exposing the nucleic acids immobilized on the surface to metal complexes (par. 0079) of gold nanoparticles (a hydrophilic species, par. 0010), whereby the hydrophilic species are attached to the hydrophilic macromolecules (metallization of DNA shows metal particle attachment of DNA, par. 0079), and wherein the nucleic acid is DNA (par. 0020) and is double-stranded or single-stranded (par. 0020). Ford et al. fail to teach the surface being hydrophobic.

Caldwell et al. teach a hydrophobic substrate (col. 7, lines 19-30), in order to provide a surface with specific reactivity.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the method of Ford et al., a hydrophobic surface as taught by Caldwell et al., in order to provide a surface with a high degree of reactivity and little or no background non-specific reactivity.

With respect to claims 4 and 11, Ford et al. teach the hydrophilic species in a water solution (par. 0023).

Regarding claims 5, 6 and 20, Ford et al. teach an additional step of growing an attached hydrophilic species to a larger size and wherein the attached hydrophilic species is exposed to an electroless plating solution (enlargement of particles by electroless deposition, par. 0010). Ford et al. further teach the electroless plating solution (par. 0011; par. 0030) comprising a gold salt and a reducing agent (solution contains metal ion species of Au and reducing reagent, par. 0011).

With respect to claims 7-10, Ford et al. teach immobilizing the hydrophilic macromolecules on the surface by applying the hydrophilic macromolecules to the surface (par. 0078) by spin-coating (par. 0078). Ford et al. further teach exposing the hydrophilic

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macromolecules to the species for 10 minutes (par. 0079), which is encompassed by the recited ranges of between 1 second and 20 minutes and between 10 seconds and 10 minutes. Wherein the surface is hydrophobic as taught by Caldwell et al.

Regarding claims 12 and 13, Caldwell et al teach a water contact angle of greater than about 60° (col. 7, lines 18-30), which encompasses the recited ranges of from 30° to 110° and 60° to 110°.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al. (US 2002/0065242) in view of Caldwell et al. (US 5,516,703) as applied to claim 2, further in view of Berning et al. (<sup>198</sup>Au-Labeled Hydroxymethyl Phosphines as Models for Potential Therapeutic Pharmaceuticals, 1998, Nuclear Medicine & Biology, Vol. 25, pages 577-583).

Ford et al. in view of Caldwell et al., as applied to claim 2, teach a method of attaching hydrophilic species to hydrophilic macromolecules immobilized on a hydrophobic surface, but fail to teach the hydrophilic species being tris(hydroxymethyl)phosphine-gold nanoparticles.

Berning et al. teach a hydrophilic species of tris(hydroxymethyl)phosphine-gold nanoparticles (581, Discussion, 1<sup>st</sup> paragraph), in order to evaluate their potential utility in the design of Au(I)-containing drugs.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the method of Ford et al. in view of Caldwell et al., a tris(hydroxymethyl)phosphine-gold nanoparticle as taught by Berning et al., in order to provide metal complexes that exhibit *in vitro* stability over wide pH ranges and temperatures.

***Double Patenting***

6. Claims 2-6, 11, 15 and 17-19 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5, 14 and 15 of copending Application No. 10/210812 in view of Caldwell et al. (US 5,516,703). Claims 1 and 2 of application '812 recite a hydrophilic macromolecule (nucleic acid) exposed to a hydrophilic nanospecies (trips(hydroxymethyl)phosphine-Au) and the complex immobilized on a substrate. However, application '812 fails to recite a hydrophobic substrate. Caldwell et al. teach immobilization on a hydrophobic substrate to prevent non-specific binding. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the method of application '812, a hydrophobic substrate as taught by Caldwell et al., in order to prevent non-specific binding of hydrophilic nanospecies to the substrate. Claims 3, 4, 5, 14 and 15 of application '812 recite a hydrophilic species in a water solution, the species grown to a larger size with an electroless plating solution, and the metal for the nanospecies being Au. Claim 4 recites the nucleic acid being single or double stranded.

7. Claims 2-6, 11, 15 and 17-19 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4, 14-16 and 20 of copending Application No. 09/990,049 in view of Caldwell et al. (US 5,516,703). Claims 1, 2 and 16 of application '049 recite a hydrophilic macromolecule (nucleic acid) exposed to a hydrophilic nanospecies (metal complex) and the complex immobilized on a substrate. However, application '049 fails to recite a hydrophobic substrate. Caldwell et al. teach immobilization on a hydrophobic substrate to prevent non-specific binding. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to

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include in the method of application '049, a hydrophobic substrate as taught by Caldwell et al., in order to prevent non-specific binding of hydrophilic nanospecies to the substrate. Claims 2-4, 14-16 and 20 of application '049 recite a hydrophilic species in a water solution, the species grown to a larger size with an electroless plating solution, and the metal for the nanospecies being Au. Claim 4 recites the nucleic acid being single or double stranded.

This is a provisional obviousness-type double patenting rejection.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Yu whose telephone number is (571) 272-2933. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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03/17/05